The Correlation between Technological Devices and Aphasiac People to Enhance Language Communication

Atyaf Hasan Ibrahim
University of Diyala,Iraq
atyafatyaf2000@yahoo.com

Fatima Rahim Abdulhussein
University of Misan
iq777@yahoo.com

Abstract

Language is a medium of communication that is pivotal to daily life interaction, any disability in using it, including aphasia, causes frustration, feeling lonely, isolation, and alienation due to fear of rejection. Many ways can be used in the treatment of speech and language disorders, such as smartphones and laptops. This study aims at investigating the use of technological devices such as computers and smartphone apps and programs by people with aphasia to enhance communication and enable them to produce and understand spoken and written language. It also aims at stating the age group that most use these technological devices. The researchers built a questionnaire of ten questions concerning which age category is aphasic and which type of major and secondary technological programs and apps are used by them to facilitate communication. Based on the results gained from the questionnaire, the researchers found that the highest range of aphasic people are 45-55 years old, while the lowest are 15-25 years old. Applications of smart phones and computers are widely and effectively used by aphasiac, in addition to social media, in facilitating their communications especially the spoken skills.

Key words: Technological Devices, Aphasia, Communication

Introduction

People suffering from Aphasia face many difficulties in their daily communication and interaction, therefore they need something to help them in conducting real

communication. The problem of the study lies in searching for the suitable technological devices that can help them in overcoming these problems. With the rapid development in health management and clinical domains, may technological devices such as computers and smartphones have been used specifically for aphasia rehabilitation. This study is an attempt to investigate the role of technological devices such as smart phones and tablet PCs that can actually be used as magnification tool to facilitate communication and overcoming language impairment of aphasiac patients.

1.2. Research Questions

The current study tries to answer the following question:

1-How can technology be used as a vital tool to facilitate communication and help people with language disorder such as aphasiac to produce and understand language in a better way?

2- Which age category most use the technological devices to help them in communication?

1.3. Aims of the Study

The current study aims at:

1. Identifying and describing the technological devices used by Aphasic people.

2- Investigating the use of technological devices in facilitating communication and enabling people with Aphasia to produce and understand spoken and written language.

3-Examining the most popular apps and software used by aphasic people to overcome the problems of language use.

2. Literature Review

There is a number of technological devices and programs that are used for helping aphasic people to overcome their difficulties in using language as follows:

2.1.1. On Defining Aphasia

Aphasia is defined by Malmkjær (2005:17) as the total loss of normal language abilities due to a damage of the cortical and/or the sub-cortical brain tissue, whereas the partial loss is called dysphasia.

Many factors affect normal language abilities of adult speakers including chronological age and level of education, there is no single norm for all. For a clinician, a patient has a speech and language difficulties related to articulatory and

grammatical-semantic levels of disorder, for theoretical aphasiologists these problems are related to disorders of 'language' in the non-speech sense.

Aphasia is differentiated from dysarthria in that the latter may have a structural or neural origin. Neurological lesions result in some kind of weakness or poor co-ordination of the patient's muscles and structures of his/her vocal tract.

2.1.2 Software for the Rehabilitation of Aphasiac Patients

Some digital tools that focus on image capture are available for the rehabilitation of aphasic people. It is an advanced language therapy that builds on the word-level skills. It is a 4-in-1 app that brings work on sentences and paragraphs for listening, speaking, reading, and writing.

Figure n.1 (4 in 1 app)

Mobile devices typically include a camera that can be used for taking photos to help retell events or reference people or objects. This camera also allows the user to make video calls via Facetime (built into iOS devices) or Skype (free app for iOS and Android). In addition, Map App (built into iOS and Android devices) provides a visual support for conversation about places and experiences, especially using Google's Street View.

The new Pad and Android devices have the feature of voice dictation built into the keyboard called Siri. It recognizes voice commands to compose messages, place calls, and find information, have the Voice Typing app to do the same. In older devices such as The Dragon Dictation app (free, iOS) shown in Figure 2, achieved similar results. They export the created text into e-mail or social media. Besides, changing a few accessibility setting allows iOS its users to hear any selected text, on websites and e-mails, as spoken words.

 Android also has a built-in text-to-speech setting that reads text aloud in compatible apps. They are helpful for people with aphasia whose listening skills are better than their reading skills (Sutton, 2012:3).
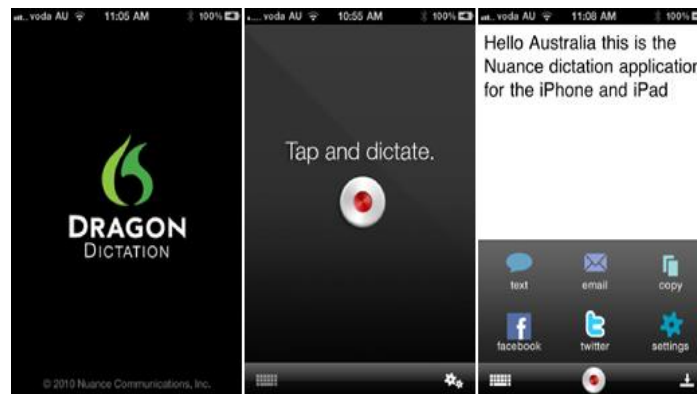

Figure 2. Dragon Dictation app.

2.1.3 Digital Technology and Aphasia

Holland and Matthews (1970) cited in (Christos Salis & Faustina Hwang (2016) that the use the term "Teaching Machines" to refer to the   applying digital technological applications that help people with communication impairments to overcome their difficulties. Significant changes have taken place , since those of the early personal computers, which opened new opportunities for aphasiologists and software engineers to design and research for new applications that can improve language functioning. More recently, advances in smartphones, tablets, and internet connectivity have contributed to the integration of technology into many aspects of daily life. They offer new possibilities for communication and working practices (Menger, & Salis, 2019: 8, Menn, 2016: 30).

Making the most of technology to enhance the lives of people with aphasia, understanding and removing barriers of accessing digital technology require an inter-disciplinary approach. A key aim of this special issue is to bring together authors and reviewers from aphasiology and human–computer interaction, to help build a cross disciplinary knowledge base. Many papers describe collaborative projects and processes inform and inspire further interdisciplinary work (Carroll, 2007:356; Damicoe etal. 2010).

3. Methodology

3.1. Data

The data comprises a group of aphasics patients found in the social media 'Facebook' under the name 'Aphasia communication group'. This group consists of sixty participants from the United States indicating their names and age. They suffer from a post stroke aphasia and are unable to communicate effectively. Some of them suffer from Aphasia for many years, others are new patients. They are diagnosed by the referring SLT or by attending aphasia support groups.

3.2. Data Collection

The Participants are asked some questions about their use of internet and technology, in a form of an online questionnaire which is designed to be so easy for their understanding. The questionnaire is clear and guide-lined related to the written and spoken information materials for aphasiac people. It consists of questions with key words highlighted and simple pictures illustrating each question. Feedback is provided to the participants. The wording of items and options within the questionnaire is provided in tables (1 & 2).

Table 1: Questionnaire of the Correlation between Technological Devices and Aphasiac People to Enhance Language Communication.

No.	Questions	Options				
1.	How old are you?	15-25	25/-35		35-45	45-55 and over
		5%	20%		15%	60%
2.	Which type of communication skills did you face more difficulty ?	Writing	Speaking	Understanding speech	Spelling	All of the options
		13%	53%	12%	10%	12%
3.	Do you use smartphones apps and Computer programs to make your communication easier?	Yes		No		
		63.%		37%		
4.		Yes		No		

	Question							
	Do you use a particular app to help you communicate?	62%			38%			
5.	Which type of software do you use to support yourself in communication?	Photos	Videos	Texts	Video calls		Audio calls	
		12%	16%	17%	33 %		22 %	

	Question	Text to speech	Speech to text	Zoom /magnify	Calendar	Reminder	Drawing	None of them	All of them
6.	Which one of these accessibility on your device you use more?	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	25%	12.5 %

	Question	YouTube	Social Media	Google	None	All types
7.	What technology have you used to access information?	YouTube	Social Media	Google	None	All types
		31%	35%	15%	9%	10%
8.	What communication skills these apps help you more?	Writing		Speaking		Understanding speech
		20%		25%		55%

Table 2: Written Questions and Answers of the Questionnaire

Questions	Answers
1. Write the name of app or apps that you use in everyday communication?	1.Facebook groups 2.Text messaging 3.Messaging
2. Do you use any other technological tools that you believe it help with aphasia?	1. Text to speech 2. Homework apps (constant therapy, tact us) 3.text prediction 4.word writing on my laptop. 5. ABC charts 6. Picture charts 7.litewriter 8.Tele-health speech therapy.9.Email 10. talk path therapy

Graphic 2: Items of the Questionnaire use of Technological Devices in Enhancing Language Communication
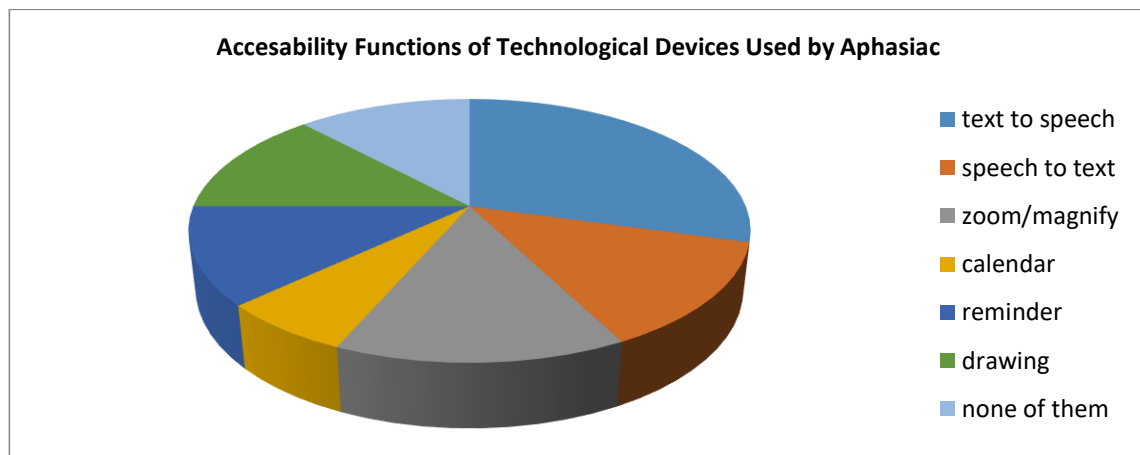
4. Results

Based on the results from the questionnaire, which consists of ten questions, the researchers found out that the people of the age 40-60 recorded the highest number as aphasic while the lowest are people of the age 15-25 are the least. Aphasic people differ in the type of skills they face difficulties in , 53% of them face difficulty in speaking skill while 13% face difficulty in writing, 12% in understanding speech, 10% in spelling and only 12% face difficulty in all types of skills. Besides, 62% of the aphasic use smartphone apps or computer programs for making communication easier, while 38% do not. 12% of the aphasic use photos, 17% use texts, 16% use videos, 33% use video calls, and 22% use audio calls.

In answering the question "which one of the technology apps and programs aphasic use to access information" , it has been found that 45 % use social media , 15% use Google, 31% use YouTube, 10% use all types and only 9 % answered that they use non . Finally, it has been found that 25% of aphasic found that those apps are helpful in speaking, 20% in writing while 55% answer that it helped them in understanding speech. Other types including Facebook groups, text messaging, ABC charts are also used but 'text to speech convertor' recorded the highest among the other types.

Conclusions

At the end of this study, the researchers concluded that technology has a tremendous effect on Aphasiac patients by helping them overcome their communication difficulties. Aphasia patients use technology in their daily activities to facilitate their communication with others, especially in speaking more than in

writing. People aged 45-55 and over, recorded the highest group of aphasic people and most Aphasic patients depend on more than one type of computer and smart phone apps, especially those converting writing or pictures to speech. Therefore, using mobile and computer apps by aphasiac people help them in maintaining social relations. Nowadays, social media is as effective as computer programs and apps in facilitating the difficulties faced by the aphasic. Computer-delivered therapy is as effective as clinician-delivered therapy of Aphasiac.

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